

## Investigating Whether Blood Type Is Linked to COVID-19 Risk

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Everybody has a blood type, and everybody is worried about coronavirus disease 2019 (COVID-19), which helps explain why recent research into possible links between blood type and COVID-19 has been widely reported.

The notion that blood type might have prognostic value in COVID-19 is intriguing, but “we’re at the stage of trying to determine if this association is even real,” Christopher Latz, MD, coauthor of [one](#) of the recent studies, cautioned in an interview.

### History Lesson

The notion that blood type might be linked to infectious disease susceptibility dates back decades:

- A [study](#) published in 1977 found that people with type O blood were more likely to become infected with cholera bacteria, and people with type A blood were less likely. The study was conducted in the Philippines; cholera is [rare in the US](#) but on the rise globally.
- The authors of a 1993 [article](#) suggested that people with type O blood are more likely to become infected with *Helicobacter pylori* than people with A or B blood because their gastric mucosa has more receptors for the bacterium.
- In 2003, scientists [suggested](#) that a blood group antigen functioned as a receptor for norovirus (formerly called Norwalk virus) docking. They found that in saliva, the virus bound efficiently to O and A antigens but less so to B antigens.

### Behind the Headlines

The first inkling of an association between blood type and coronavirus infection came during the outbreak of the first severe acute respiratory syndrome coronavirus (SARS-CoV), which began in [late 2002](#).

Spurred by the research linking blood type to susceptibility to the norovirus and *H pylori* infections, Hong Kong scientists looked for a link between blood type and SARS-CoV infection in 45 physicians, nurses, medical students, and allied health staff who had been exposed to an infected patient.

Of the 45, 34 had serologically confirmed SARS-CoV. In a 2005 [research letter](#) in *JAMA*,

the researchers reported that the health care professionals with type O blood were less likely to have become infected than those with other blood types.

Fifteen years later, in an [article](#) that wasn’t peer-reviewed, scientists in China reported similar associations between blood type and severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). They compared the ABO blood group distribution in 2173 patients with COVID-19 from 3 hospitals in Wuhan and Shenzhen, China, with that in the general population in those regions. The researchers found that type O blood was associated with a lower risk for COVID-19, while type A blood was associated with a higher risk. Although preliminary, they said they hoped their finding would encourage further investigation.

### Mixed Signals

Some researchers have picked up the gauntlet laid down by the researchers in China, but their findings haven’t been consistent.

In June, a group of scientists from Europe and Australia [reported](#) the results of a study comparing genome data from 1610 patients with severe COVID-19 and 2205 healthy blood donors. All of them were from Italy or Spain. The researchers found that gene variants in 2 regions of the human genome were associated with severe COVID-19 and a greater risk of dying from it.

One of those stretches of DNA happens to carry the gene that determines blood type, and the study found that, compared with people with other blood types, those with type A had a 45% higher risk of developing severe COVID-19 if infected, whereas those with type O had a 35% lower risk.

Spurred by the earlier research from China, Latz and his coauthors in July reported in the *Annals of Hematology* that they found no relationship between severe COVID-19 and blood type. He and his coauthors focused on 1289 people who tested positive for SARS-CoV-2 throughout the Mass General Brigham system from March 6 to April 16 and had a known blood type.

The researchers found no significant connection between blood type and COVID-19–related hospitalization, intubation, or



death. However, multivariate analysis found that people who were Rh positive were more likely to test positive than people who were Rh negative, and those with B or AB blood were more likely to test positive than those with type O blood.

[Research](#) published in April and updated in July, but not yet peer-reviewed, agreed in part with the findings of Latz and colleagues. The authors used data from 7770 individuals tested for SARS-CoV-2, 2206 of whom were positive for the virus, in the New York Presbyterian hospital system.

The authors pooled their findings with data from China and the United Kingdom and found that among those with Rh positive blood, people with type B were more likely to test positive for SARS-CoV-2, and people with type O were less likely to test positive. However, their data did not provide strong evidence of associations between blood type and intubation or death among patients with COVID-19.

### The Upshot

“The basic science on this is extremely weak,” Latz said of the relationship between blood type and COVID-19. So at least for now, blood type should not be used to identify which people who become sick with COVID-19 are likely to develop severe disease, he and his coauthors wrote.

“I’ve had a lot of physicians who are using our paper to tell patients not to be overly worried” if they don’t have type O blood, Latz noted. ■

**Note:** Source references are available through embedded hyperlinks in the article text online.